



Simulations, Intelligence, and Simulated Intelligence

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**COMMANDER'S
BUSINESS**

**Visualizing a
Future State**

**Assigning
Missions**

**Seeing, Hearing,
& Understanding**

**COMMAND
is the
ART
of**

**Decision
Making**

**Selecting
Critical Time
& Place**

**Leading, Guiding,
& Motivating the
Organization**

**Formulating
Concepts of
Operations**

**Prioritizing &
Risk Assessment**

**Anticipating
Change**



***STAFF'S
BUSINESS***

**C
O
N
T
R
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L**

IS THIS
SCIENCE
OF

Defining Limits

**Computing
Requirements**

**Allocating
Means**

**Describing
Interfaces**

Monitoring Status

**Identifying
Variance**

**Acquiring & Applying
Means to Accomplish
CDR's Intent**

**Developing Specific
Instructions From
General Guidance**

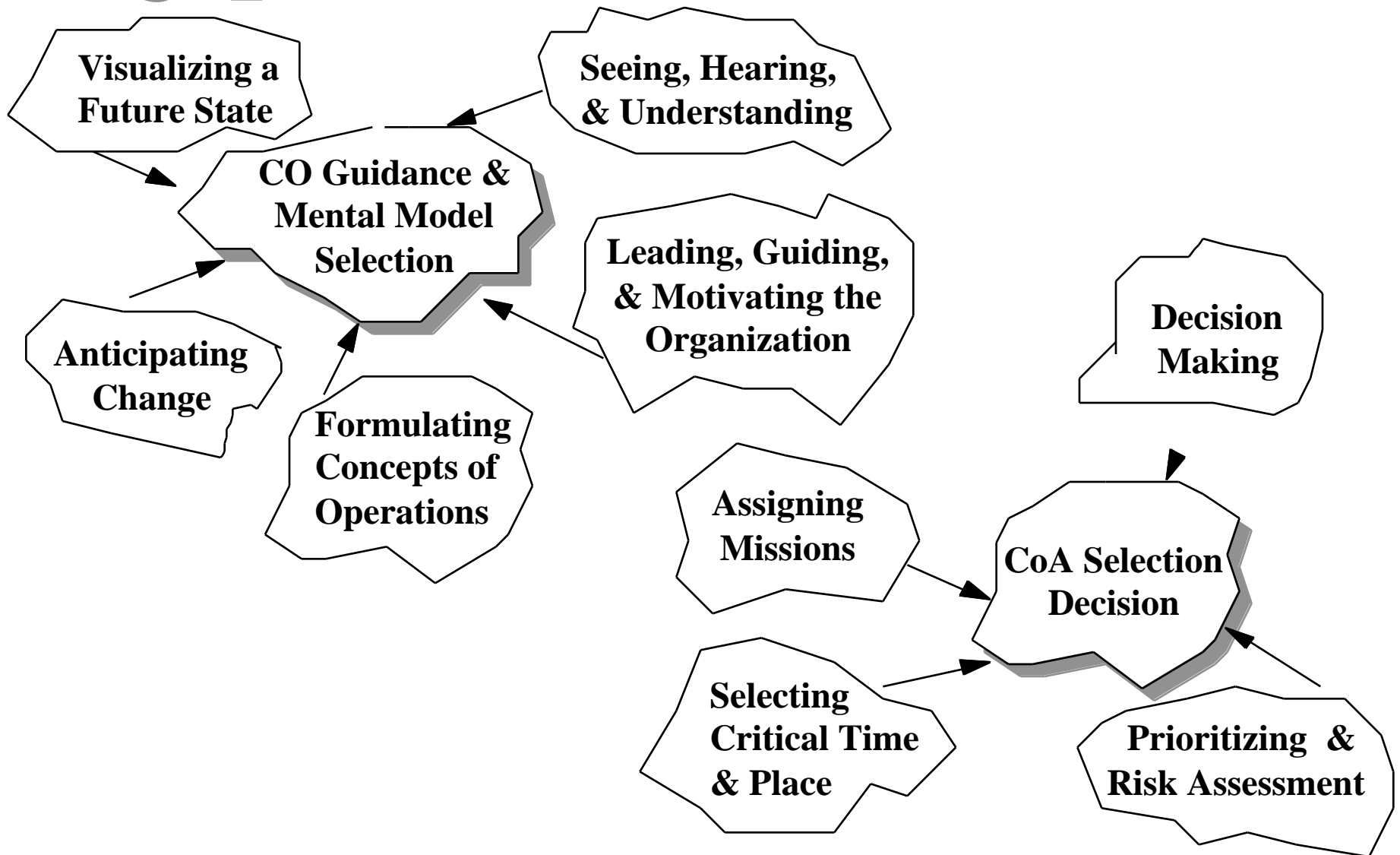
**Correcting Deviations
from Guidance**

**Measuring, Reporting
and Analyzing Performance**

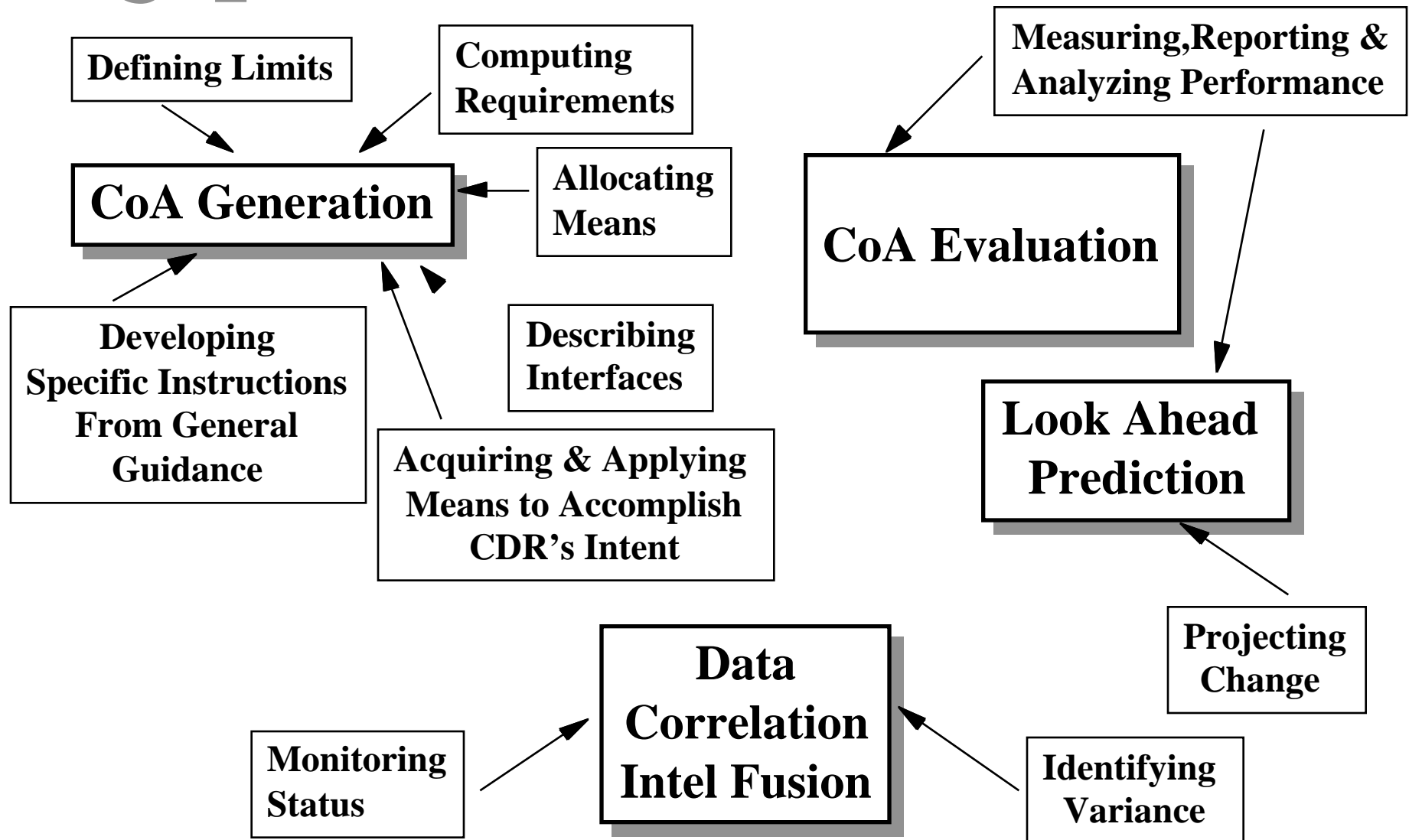
Projecting Change



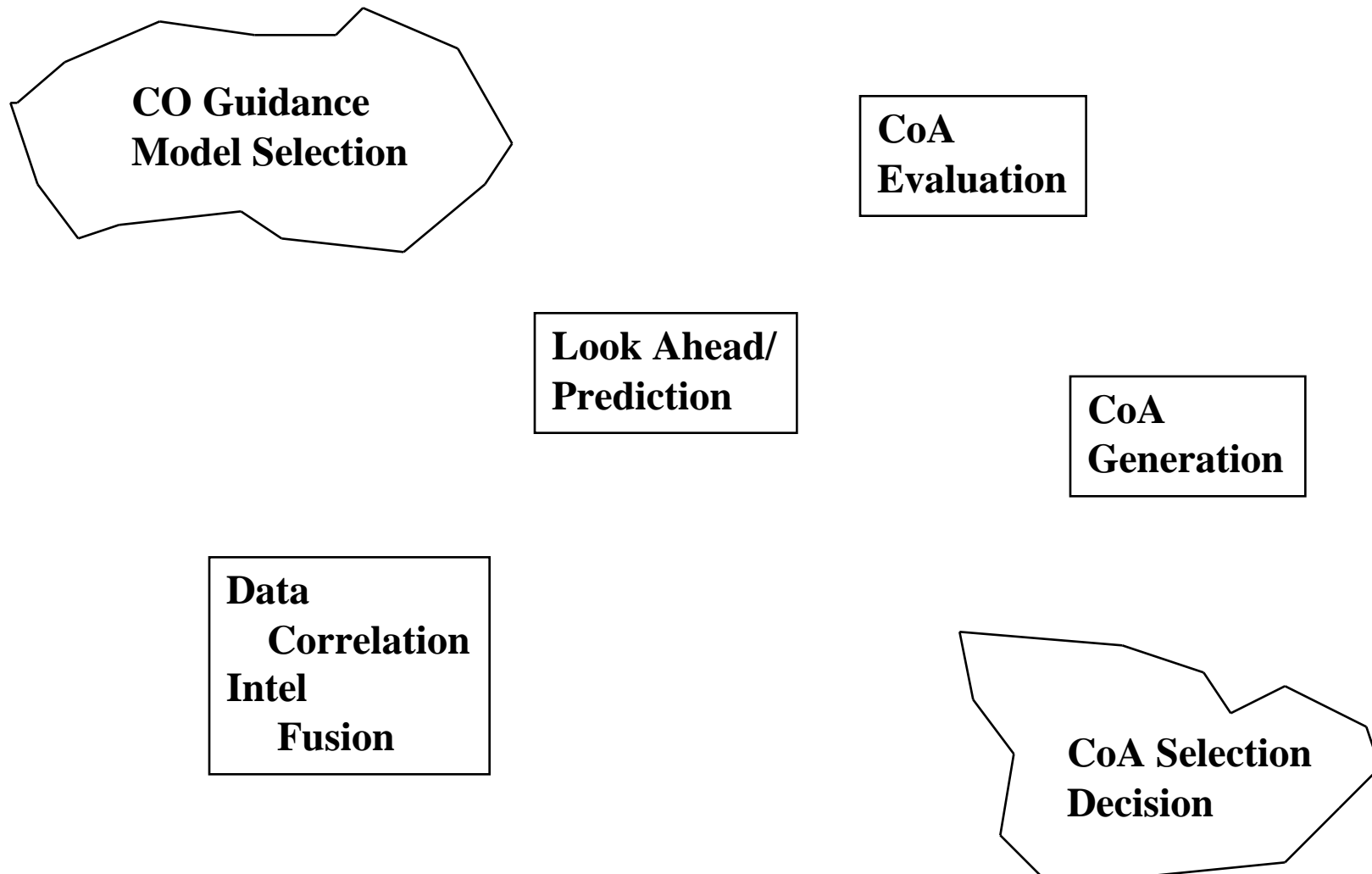
---Notational C2 Minimal Spanning Functions



CNI --Notational C2 Minimal Spanning Functions



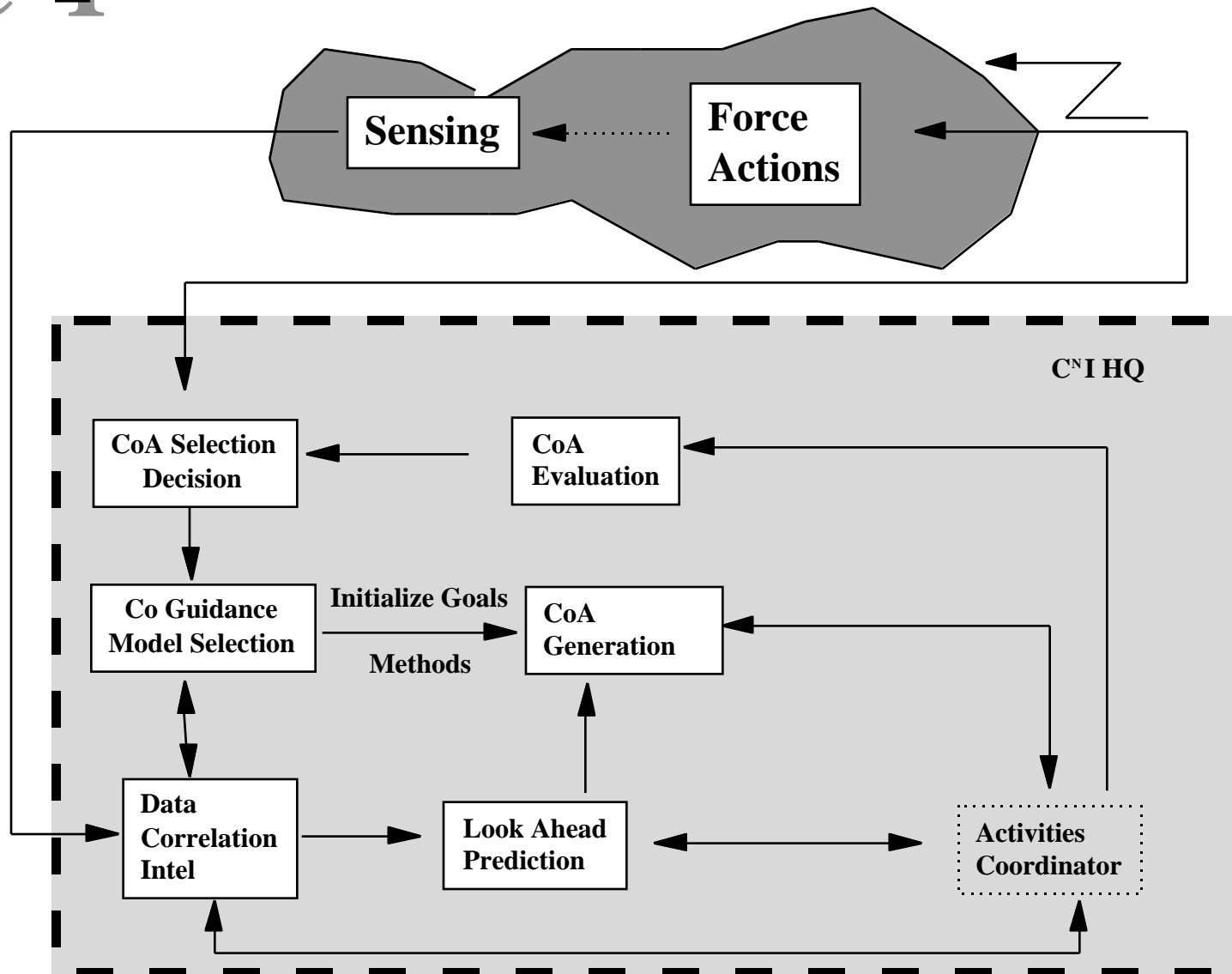
CNI --Notational C2 Minimal Spanning Functions



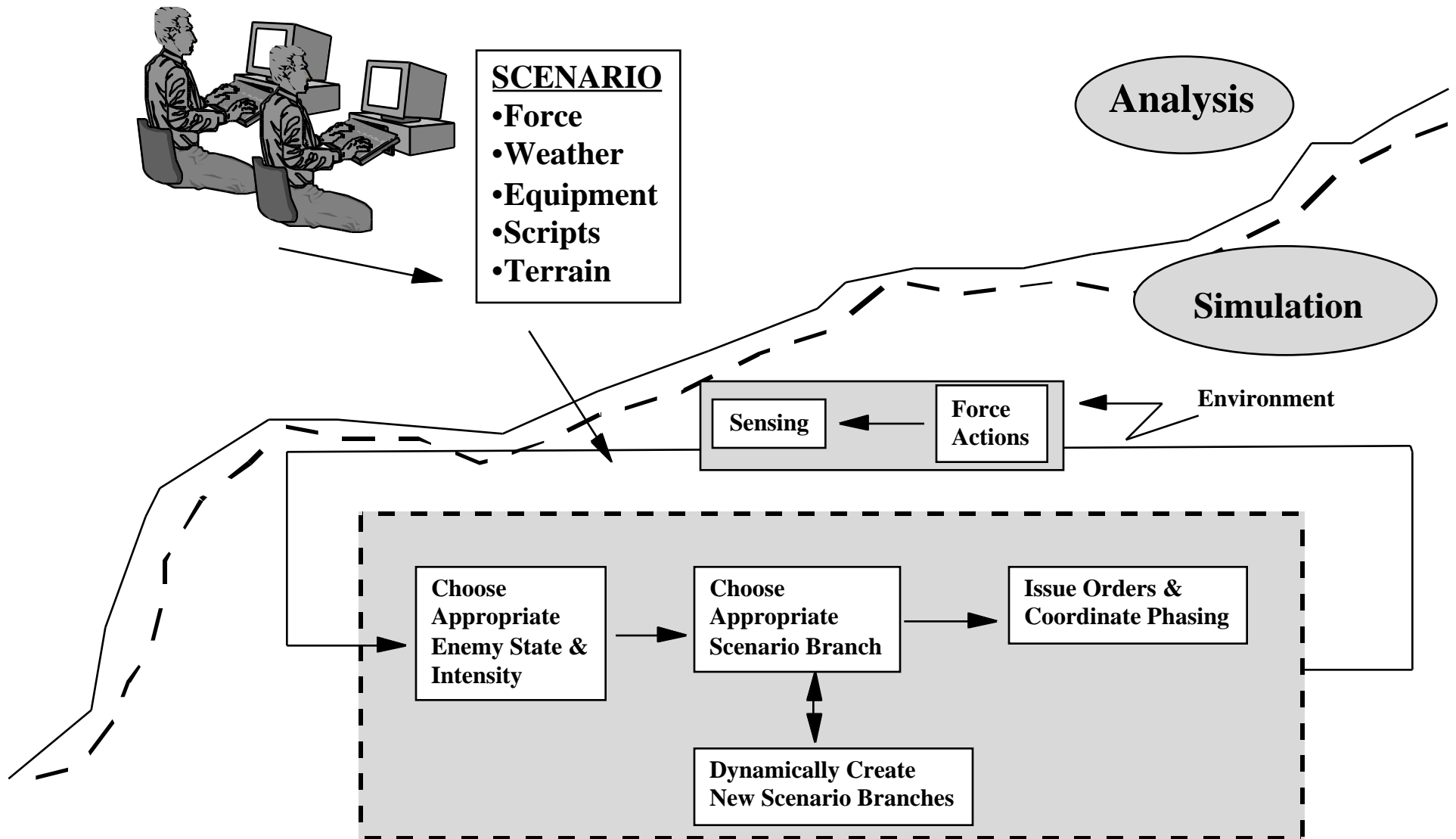
CNI --Notational C I Functions for HHQ

1. Data Correlation/Intel Fusion..... 2
2. Look Ahead/Prediction..... 2, 3
3. Commander's Guidance (Model Selection)..... CO
4. CoA Generation..... 3, 1, 2, 4....
5. CoA Evaluation 3, et.al
6. CoA Selection, Decision CO

C^NI --Notational C^NI Architecture



CNI --Current Automated Campaign Simulation



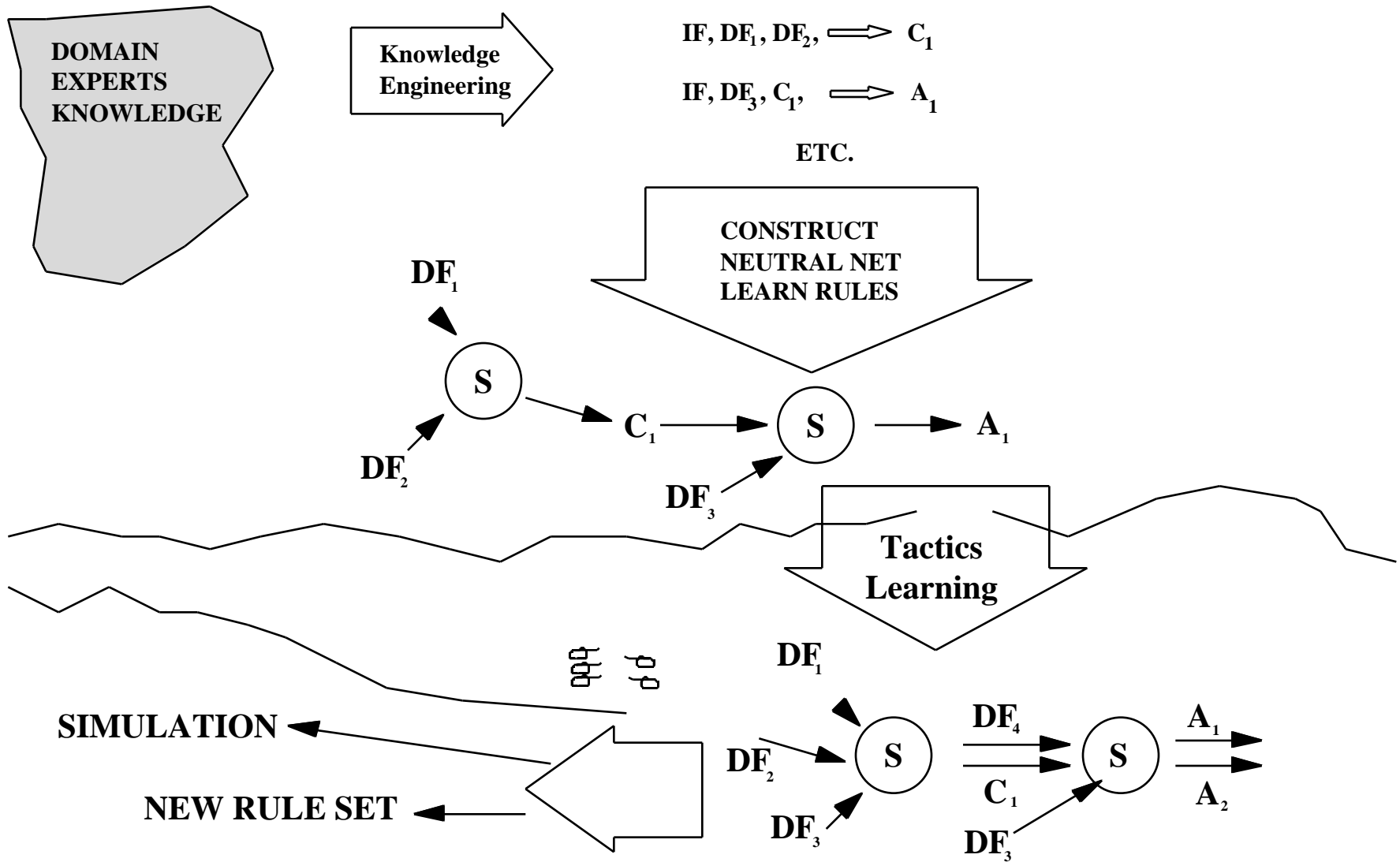
CNI --Ways to Degrade/Defeat the C I System

- Information Flow
 - Deny Communications
 - Blind Sensors
 - Degrade Functional Processing
 - Deny Decisional Support Systems
- Deception
 - Provide Support for False Model
 - Condition the System to Make Faulty Response
 - Overwhelm with Information
- Overwhelm Force
 - Response Time
 - Fire Power
- Etc.

CNI *Notational MOE's*

- Accuracy of Data Correlation/Intel Fusion
- Time to Convey and Respond to CDR's Concept
- Time to "Understand" Situation
- Capability to Process Multiple Hypotheses on Enemy Operations
- Capability to Evaluate/Wargame Multiple COA's for Blue
- Time to Train on Decision support System
- Flexibility to Reconfigure for New Tactics, Systems, Theaters...

CNI *Intelligent Objects- Item System*



C^NI ---Issues

- Can Warfighting Simulations Produce Emergent, Macro C^NI Behavior
 - Without Simulating Micro-Intelligent Agents,
 - That Provides Insight into the Design of the Overall C^NI System.
- What Issues / Questions are Most Appropriately Addressed by:
 - Current Scripted Campaign Simulations,
 - Training Simulation
- To What Degree Should we view Training Exercises as Part of an Overall Scheme of Experimentally Based Trials.
- How Intelligent Can We/Do We Need to Make Simulated Actors?
- What Combined Capabilities do We Need to Give Senior Decision Makers an Overall Intuitive Feel for the Force?